

Alcohol alert

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Valorization Addendum

Relevance

Binge drinking (i.e., drinking 4/5 glasses of alcohol for a girl/boy on one occasion) during adolescence is associated with adverse consequences, such as injuries due to (road traffic) accidents, violence, crimes and aggression (Gmel & Rhem, 2003; Graham et al., 2000; Swahn et al., 2004), (illicit) drug use, smoking (Miller et al., 2007), unwanted or unsafe sex (Bonomo et al., 2001), and unintended pregnancies. Moreover, as the brain is not yet fully developed in adolescents, brain damage, impaired learning, and cognitive deficits are particular irreversible consequences of drinking for this age group, and their effects continue during adulthood (Brown et al., 2000; Peterson et al., 1990; Zeigler et al., 2005). Finally, the younger the adolescents are at the onset of alcohol use, the higher their odds of abusing alcohol later in life (Grant et al., 2001). Onset of alcohol use has been further associated with antisocial symptomatology and an elevated risk for stressful life events (e.g., trouble with the police) during adulthood (Irons et al., 2014). Heavy alcohol use thus comes with a lot of serious health, social, and economic consequences. Not only the physical health damages are costly for society (e.g., ambulances that are needed or emergency room admission due to alcohol related injuries), but school drop-out due to alcohol use, alcohol-induced violence and aggression that lead to the destruction of public and private property, and police interventions are associated with high societal costs (Drost, Paulus, Ruwaard, & Evers, 2014). Yet, alcohol is still a widely accepted substance that is part of adult social life. Alcohol has also shown to serve some social functions during adolescence. For example, alcohol use decreases inhibitions, enabling young people to make contact with other people more easily, and thereby improving their social skills (Pape & Hammer, 1996). A responsible handling of alcohol and a reduction of binge drinking at an adolescent age is therefore important.

Target groups

Beneficiaries of the product of this dissertation are in the first place adolescents that have or have not started binge drinking, yet, as the goal of the studies conducted during this project was the reduction and prevention of binge drinking among adolescents. Furthermore, teachers and directors of schools could be interested in the results to increase their schools' investment in health promotion and thereby reducing absenteeism and school drop-out due to alcohol. Policy- and lawmakers should be interested as the results could be used as guidelines to develop and implement new policies regarding alcohol use and taking preventive measures to reduce alcohol use.

Product

In this dissertation, the development and evaluation of an intervention to reduce binge drinking among 16- to 18-year-old Dutch adolescents is described. Research on alcohol use and interventions to reduce binge drinking are scarce for this age group.

In particular, when adolescents are allowed to buy and consume alcohol, which was the case in the Netherlands when the current intervention was developed. Based on literature and extensive formative research like focus group interviews (Chapter 2) with the target group and a Delphi study with experts (Chapter 3), we developed an online game called “Watskeburt?!” (Dutch slang for: What happened?) (Chapter 5). In this game, the adolescent wakes up after a night of partying and does not remember what happened the night before. Goal of the game is to find out what happened. While the adolescent is playing the game, a couple of questions appear on an in-game cell phone concerning for example the pros and cons of drinking, perceived pressure from friends and family to drink, and possible difficult drinking situations. They then receive computer-tailored feedback about their attitude, how to handle peer pressure and how to refuse alcohol.

Additionally, a computer-tailored component of the intervention aimed at parents was developed alongside the intervention for adolescents. The goal of the parental component was to provide parents with information and feedback about how to clearly communicate with their child about alcohol and how to set appropriate rules concerning alcohol use. The studies conducted during this project, as well as earlier studies, have shown that parents still play an important role when it comes to regulating their child’s alcohol use. Their own alcohol use, the way they communicate, and the use of strict rules are hereby the most important factors that influence their childrens’ alcohol use (Ennett et al., 2001; Jander et al., 2015; Jander et al., 2013; Spijkerman et al., 2008; Van Der Vorst et al., 2006).

Innovation

So far, computer-tailored health interventions were often purely text-based. Recently, more studies were developed that use video-based messages (Stanczyk et al., 2014; Vandelanotte & Mummery, 2011; Walthouwer, Oenema, Soetens, Lechner, & De Vries, 2013) to increase attractiveness of these interventions. Using games to deliver (health-) education and (health-) information has recently gained in popularity (Connolly et al., 2012; DeSmet et al., 2014). If the goal of a game is to educate people, instead of only entertaining them, it is referred to as a serious game (Connolly et al., 2012). To increase the attractiveness of our intervention we designed a serious game to carry the computer-tailored intervention, which, to our knowledge, has not been done in this format before.

Realization

The game was developed for 16- to 18-year-old adolescents, but has been tested on 15- and 19-year-old adolescents as well, as the intervention was tested in schools and 15- and

19-year-olds were in the classes as well. Effects of the game showed that the intervention can successfully reduce binge drinking in 15- and 16-year-old adolescents (Chapter 6). Effect sizes increased when adolescents adhered longer to the intervention, indicating that complete use of the intervention is important for maximizing the potential public health impact. Effects for older adolescents were, unfortunately, not found. These are somewhat promising results, but before the game can be implemented on a larger scale (e.g., nationally) to benefit as many adolescents as possible, some improvements to the game and the intervention should be made.

Particularly, the focus should be on how to better involve older adolescents to increase effectiveness in those ages, too. A big problem with this kind of interventions is that they are based on voluntariness. Therefore, motivation to change behavior is necessary. Completion rates of the current intervention were very low (Chapter 6). Analyses of adherence showed that older adolescents tended to drop out earlier than younger adolescents, indicating that particularly older adolescents in this study were not motivated to change behavior, or even to consider behavior change. This might be because a health problem and the need to change behavior have not developed yet, but still those adolescents have experienced the benefits of alcohol use (e.g., social rewards). Of course the same goes for younger adolescents, but perhaps a different approach is necessary with older adolescents, meaning that the focus of the intervention should be more directed toward pre-motivational factors in order to increase their willingness to participate in these kinds of interventions. Furthermore, usability studies should be conducted to carefully monitor adolescents' use of the intervention, and to identify which parts of the intervention work well, and what of the game, questions and messages can be improved.

Results of the studies conducted during this project have shown that parents are still important and influential people in adolescents' alcohol use. Results of the parental component also gave an indication that parental participation might be of additional value, but due to methodological choices made in the design (i.e., adolescents had to invite their parents to participate in the study), the parental sample might be biased (e.g., only very involved parents participated), and interpretation of the effect is very difficult and observational in nature. In the future, the effect of the parental component should be evaluated by means of a randomized controlled trial (e.g., adding arms with and without access to a parental component). Furthermore, attention should be paid to how to involve parents in the intervention, as participation rates for parents were very low in this study.

The current product of this dissertation forms a meaningful, important, and in parts effective, innovative tool to solve an important societal problem which is binge drinking

in adolescents. The existing game could be adapted and improved to increase adherence to the game, and thereby increase the effectiveness to reduce binge drinking and to prevent adolescents that have not started binge drinking yet from doing so. The adapted version, of course, will have to be evaluated again in terms of effectiveness as well as intervention use.

After a successful adaption of the game, it could be implemented by using the “gezonde school” (healthy school), an initiative of the National Institute for Public Health and the Environment (RIVM, Rijksinstituut voor Volksgezondheid en Milieu). In this initiative the RIVM offers a diverse range of health interventions targeted at various health behaviors of children and adolescents (e.g., alcohol use, smoking, bullying, nutrition, physical activity) that can be implemented by schools. On the “gezonde school” Web site schools can simply choose an intervention that they think is necessary and feasible to implement in their school. Other national institutes such as the Trimbos Institute, which is concerned with the monitoring, prevention, and treatment of addictions, could also participate in the active implementation of the current game via their network. Dutch municipalities and regional public health authorities (GGD'en) could also adopt and implement the game as they serve as an important access point to reach large parts of the Dutch population. Another possibility for implementation could be via initiatives such as Vision2Health, which offers evidence-based, innovative interventions to improve health and health communication. Finally, implementation could occur directly among the adolescents via social media. In order to make this game successful on social media, it might need an additional social component, something that is worthwhile for the adolescent to share it with their friends. However, this possibility needs a lot of careful research, as it might also backfire in such a way that for example adolescents try to outperform each other on drinking.

No matter in which way the adolescents will get in contact with the game and traverse through the intervention, the benefits for the adolescent and the society will be tangible. Adolescents will engage in less binge drinking and perform better at school, thereby increasing their opportunities later in life. Society will immediately benefit by the reduced costs of the consequences of health services and delinquencies caused by adolescent alcohol use. Long-term benefits for society could be that due to reduced alcohol use, less long-term damage will be done to the brains and young adults will be able to contribute more to society than young adults with permanent brain damage due to alcohol use during adolescence.